

QUA • RAE

HERE IS NEWS OF ... RADIO ASSN. OF ERIE

VOL. III NO. 3

MARCH 1972

RAE BUSINESS MEETING MINUTES . . .	3
HAM OF THE MONTH, Tom Gannon . . .	2
Radio vs. Sun, Part 3	4
DX Contest	5
SSB	5
RAE Photo Album	6
RAE REPEATER COMMITTEE MT. MIN. . .	7
Prez Sez	8
Letters From Our Readers	9
RAE Director's Notebook	9
ACTIVITIES	
Tech Talk April 6	9
Where the Action Is	9
ANTENNA PRIMER	
Introduction	10
Cubical Quad	11
GSRV Dipoles	12
Inverted "V"	13

ZEPP	14
Vertical	14
Windom	15
Double Balun (Bazooka)	15
Repeater Committee Membership list	17
DIRECTORY additions	17
Calendar	18

CONTRIBUTORS

Chuck Lewis, K3ATZ . . .	838-2862
Mike Hall, WA3HSR . . .	833-9649
Linn Jeters, W3HTD . . .	454-2791
Chuck Marross, WA3KAI . .	455-8829
Leo Weiner, W3LOS . . .	521-1331
Chuck Bliley, K3NAU . . .	866-1132
Gene Gruber, W3NFX . . .	
Powell Brown, K3QAY . . .	899-4843
Jim Fitzreider, K3QHO . .	456-0636

ERIE'S FINEST AMATEUR RADIO NEWSBULLETIN.

The Radio Assn of Erie, Inc.
P.O. Box 844
Erie, Pennsylvania 16512

Contributors, Cont.
Dick Shreeve, W3PIX
John Squire, K3UPC
Charlie Smith, W3ZIO

YOUR NAME SHOULD APPEAR
HERE. Send your info
to Robert E. Bair, R 7,
Station Rd. Erie, Pa.
16510 - Phone 725-9226

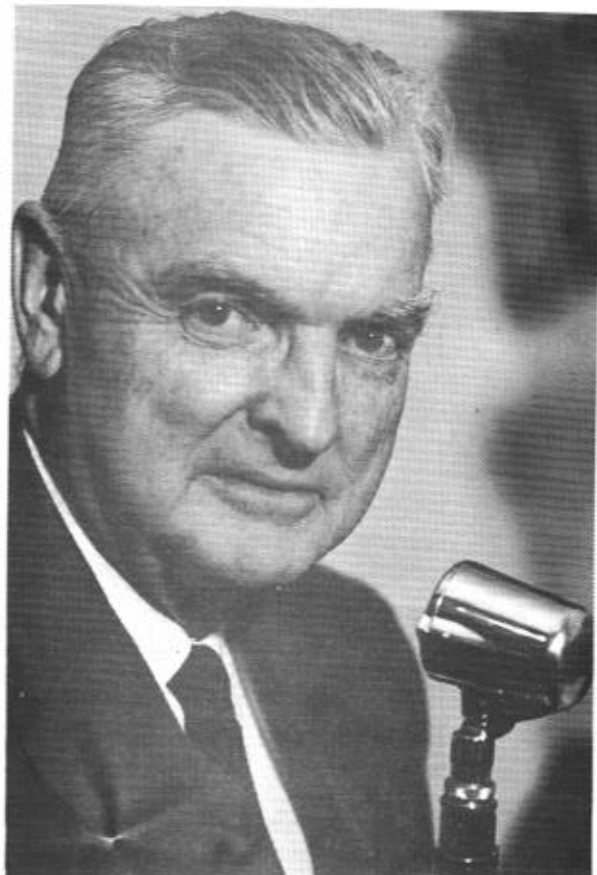
Complimentary
Copy

NON-PROFIT ORG.
U.S. POSTAGE
PAID
ERIE, Pa.
Permit No. 266

SPECIAL ANTENNA PRIMER ISSUE

TOM GANNON W3YX

HAM OF THE MONTH



by Charles A. Bliley

Have you ever wondered how the other guy got started in Amateur Radio? It is amazing how many variations of the same story there can be, and this month's Ham of the Month, Tom Gannon, W3YX, has a little different twist.

Tom is another one of the many hams who got interested in Amateur Radio through an introduction to Dawson Bliley, W3GV, over thirty seven years ago. He remembers those days before getting his "ticket" as ones of "building crystal sets using oatmeal boxes as forms for winding inductances and of headphones borrowed from the local telephone set." KDKA Pittsburgh and WGY Schenectady, N.Y. were coming across the cat whisker.

Graduating from a code class at the Sylvania plant in Emporium, Tom went to Buffalo, and "took the code exam . . . using a steel pen and inkwell because they ran out of pencils." Even with such an absurd hardship as that, Tom passed his test, and received his first call sign of W8RAB.

When Emporium was badly flooded in 1936, the only link to "the outside world" for five consecutive days was the Sylvania Amateur Radio Station. Tom, a good friend, W8OYK, and the others handled so much traffic they "wore out the rug in the shack, and it had to be replaced." (Just another fine example of how Amateur Radio operators have always come across when the chips are down.)

While living in Warren, Ohio, he assisted in the formation of the Warren Amateur Radio Association and served one term as President of that group.

Upon returning to Erie, Tom began using his W3RVG call sign for which he had applied when he was commuting to Erie earlier. With the advent of incentive licensing and the "Grandfather Clause", Tom applied for his present call W3YX. You can hear him on twenty meters most every night chasing that elusive DX. (DXCC 211 countries).

In addition to operating and installing or repairing his many quad antennas, Tom loves to play golf and sail with his friends at the Erie Yacht Club power squadron. From all reports he is also doing an excellent job as chairman of the power squadron's educational program - something a bit different from his normal job as a professional electrical engineer.

All too often many people go through life quietly making contributions to their community and are never publicly thanked for the many precious hours and sacrifices they have given in someone else's behalf.

So it is with great pleasure that we salute you, Tom Gannon, as The Radio Association of Erie's HAM OF THE MONTH.

BUSINESS MEETING

MINUTES

FEB. 3, 1972

The meeting was called to order at 8:12 PM by K3QAY.

Officers present: K3QAY, W3ZLO, WA3HSR, and WA3EAY.

Directors present: WA3MAU, WA3HDK, K3VLP, K3UPC, W3SN, and WA3KAI.

Introduction of those present was held.

The minutes of the January meeting were approved as read.

The treasurers report indicated a balance of \$279.22 with bills paid.

K3VLP moved that all new bills be paid and the motion was carried.

CORRESPONDENCE:

- 1) WA3HSR indicated that he now had a new supply of Form 610.
- 2) A note of thanks from the family of Milt Shreve.
- 3) Several new 1972 memberships.
- 4) \$1.00 donation to the VHF group was turned over to WA3MAU.
- 5) Bill from Addressograph for \$20.35.

COMMITTEE REPORTS:

QUA-RAE - WA3HDK indicated costs were again up and more ad sales were being sought. Enough postage remained in the bulk permit for four more issues.

CD - W3KPM was not present. W3ZLO reported on the SET activities. Chuck indicated good mobile activity on both 10 and 6 meters. This was a good test for emergency equipment capabilities.

ARRL ASSISTANT DIRECTOR - W3ZLO stated that the status quo was expected to continue as far as amateur allocations are concerned and FCC action on several new proposals. Chuck also advised members of the upcoming increase in ARRL dues to \$7.50.

BOARD OF DIRECTORS - K3UPC advised that a lawyer was studying the leasing of repeater equipment by the RAE. John indicated that the board would like quarterly reports from all committees in finances for auditing

ACTIVITIES - W3ZLO indicated the following upcoming activities. February 17 - Activities with speakers from the MARS services. March 2 - Circuit board making and discovery meeting following business. March 16 - 41-V clinic for area buffs to work out problems with them. April - Willie Manola, W3WBA. April 8 - RAE Auction. May - Possible airport tour.

REPEATER - Report of the meeting on January 23 followed: Two chosen sites Bliley Electric for receiver and Turnbull elevator for transmitter. The repeater will go to a .76 output and the CW ID has been installed. Bob, K3WTZ also reported that Warren Radio had donated a 6 foot rack and K3ZGG, W3AQY, W3PJD and W3GHT each donated \$50.00 to the repeater. Dues were increased to \$2.00 per month for repeater users. K3MAU then discussed several aspects of the leasing agreement at the receiver site.

AUCTION - WA3HDK and K3VLP reported that they would need about 20 people to work. The profits from the auction will be divided equally by the repeater, the RAE and the QUA-RAE. Publicity on a national basis had been taken care of awhile ago.

OLD BUSINESS

WA3HSR expressed a plea for operators during the ARRL DX Contests coming up.

K3QHO reported that any fire extinguisher ordered will be delivered in April during the selling period.

NEW BUSINESS

WA3HSR advised that the club's annual insurance premium was due soon

(continued on page 5)

RADIO VS. SUN

PART 3

Sunspots are believed to occur as the result of the uniting of several granular pores on the sun's surface or photosphere. These granular pores are believed to be the descending parts of convection cells contained in the upper layers of the sun. After bringing heat to the surface, the convective cell, then cooler than the surrounding material, begins to descend, thus giving rise to the darker colored granular pores. The sunspots are formed within the latitudes of 30° and 8° both north and south of the solar equator. As mentioned earlier, the number of sunspots peaks every 11 years. During sunspot minimum, they are more likely to appear at the higher ranges of the latitudes, and, as the cycle nears its peak, the sunspots gradually form closer to the lower latitude ranges. Sunspots usually occur in groups. When forming, the granular pores seem to unite in two areas, a leading spot and a following spot. One spot appears to lead the other because of the sun's rotation from east to west. During the first few days of their formation, the spots rapidly separate themselves while each continues to grow in size. Within ten days of formation, the sunspots have achieved their maximum extent and the separation ceases. After attaining this extent, the following spot is the first to decay. Meanwhile, the leading spot, which appears more uniform in structure, decays more slowly and may last many months.

The structure of sunspots remained a mystery to men until many of the atmospheric distortions were eliminated. Pictures taken from high altitudes indicate a similar structure for most main sunspots. Sunspots are made up of two definite regions. The umbra, which is the dark inner part, and the penumbra, the lighter of the two dark areas which surrounds the umbra. The umbra, which is the smaller of the two yields little visible structure. However, in fully developed and complex sunspot groups, very bright luminous bridges may appear to cross the umbral region. This luminous area can change its brightness

quickly and in some cases is the source area for the Sunspot Flash type of flare which will be discussed later. The penumbral region of the spot, is clearly separated from the umbra and appears to have a very complex structure. It appears in photographs as many elongated granules that are oriented towards the center of the spot. Many theories circulate as to their origin, but they may simply be made vigorous convective cells. The main period of the sunspot maximum is about 11.1 years, varying between the extremes of 7 and 17 years. From graphs of cycles, it is also apparent that intensity of the peaks (number of sunspots) which seems to be about 80 years. The limited time of good solar observation makes speculation on the 80 year cycle impossible. It is worthy to note, however, that the peak in 1958 was the crest of the 80 year cycle and one of the most intense. If the trend in the past cycles continues, the cycles immediately after the crest are likely to have unusually low peaks and gradually work up to another great peak in 80 years. This is good news for the young newcomers. HI

Mike, WA3HSR

Next time we'll take a closer look at some physical properties of sunspots pertaining to magnetics, and begin to explore the exciting world of solar flares, the real causes of propagation disturbances.

STRAYS

K3PAJ - Now that he is retired, Frank says he's looking for an SSR receiver. Could be something brewing?

K3VLP - George must get his kicks out of driving around in blizzards, yakking on 10m and taking short cuts through gas stations going sideways

WA3HSR - Mike will be NCS on LEEN during March now that the DX-60B is back in order.

WA3ISN - Rick will soon be tying the knot.

Minutes (continued from page 3)

K3UPC moved "to pay the \$27.00 premium with the premium subject to change with upcoming lease agreements." Seconded by WA3HDK, voted on and carried.

WA3ISN of the Field Day committee reported that band sign up sheets would be out next month and this year's activities would be held on the field next to Bliley Electric Company.

K3QHO moved for adjournment at 9:34 PM, seconded by K3UPC, voted on and carried.

There were 20 members and 3 guests at the meeting.

Respectfully submitted,
(signed) Michael D. Hall WA3HSR
Secretary, RAE

"DX" CONTEST CONTINUES

Report on first half of 1972 DX Contest

Along with the first big snow of the winter, the week end of February 5 and 6 brought the first half of the 1972 DX contest. As one that has been active in this contest for some years I found that this was a year of dissapointment in as much as conditions were very poor. There was not the usual JA's and other Pacific islands on 10 meters Friday night as there had been other years. Saturday morning 10 meters did not come to life until after eleven o'clock. All day Saturday and Sunday it did not produce the pages of contacts we had in other years. We heard only two UA's on ten meters and the more exotic European and African stations were conspicuous by their absence. Fifteen meters was the best producer of points by far for both days with the prefixes-9GI, UP2, IT9, FM8, about the only good stuff heard for both days. There were the usual South Americans that were reporting running 200 watts (and having signals that had to be over 1000 watts.) There were a large number of KP4's and KH6's that had good signals and were doing a nice job handing out reports.

Lets hope the first weekend in March gives us better propagation and we can make up the over 100,000 points we need to equal our last years score.

Dick Shreve W3PIX

RAE CONTEST PARTICIPATION UPDATE

The 1972 ARRL DX Contest, so far as RAE participation is concerned, has been pretty much a failure. During the first weekend, which was plagued with two snow storms, only three people showed up to offer their help in operating; quite a few less than the number who volunteered at recent club meetings. The Invader 2000 refuses to show any signs of grid drive and thus we were forced to go "QRP" with a TR-4. The newly erected 10 M beam can't even be rotated by the arm-strong method. All-in-all it was a typical contest with Murphy winning this round. Only 1600+ points were amassed this first phone weekend, and just 18 countries worked. With the CW breaks in between, we hope to have the Invader loading to full smoke, a new antenna and rotor and sufficient operators for the next phone weekend on March 4 and 5. Since the first showing was poor, we will be going all out to improve on last year's score. If enough people volunteer, we hope to run the better part of the entire 48 hour contest period. If you have any talent and would like to offer your help, contact WA3HSR and you will be placed in the time slot of your choice. However, first come - first served...don't everybody call at once.

Mike, WA3HSR

S.S.B. (SALE-SWAP and BUY)

For Sale: Hammarland Super-Pro Receiver BC-779-B General Coverage Good CW. SSB receiver Call Frank, WA3NGC 838-2574.

Wanted: 12 Volt DC supply for Swan transceiver. WA3HDK, Bob, 725-9226 after 5 PM.

Wanted: Novice gear. Prefer an HW-16, or DX60 and HR10. Dan Cerwin. 1627 Garlock Drive. 838-6395.



WA3FFD, Jim Rose with his partially completed CW electronic keyer and monitor scope. Taken while home from Penn State for Christmas vacation. Jim has First class commercial and Advanced Amateur.

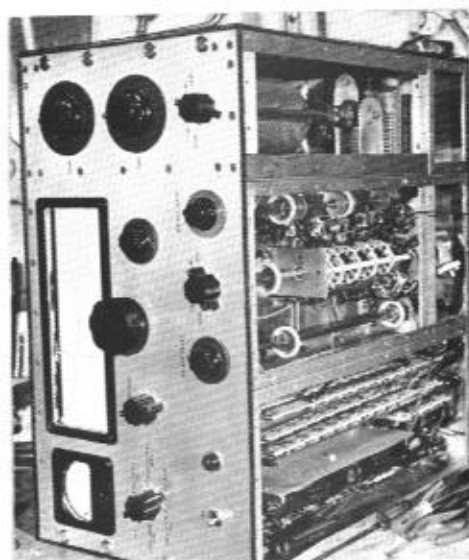


February's Ham of the Month, Leo Weiner is busy making pre-smoke tests on the 450 watt homebrew CW transmitter he is building. A top CW man, Leo also likes building and experimenting.



ABOVE: Leo shown in his neat operating position. His desk a lot neater than mine.

RIGHT: Close-up of Leo's handiwork. Transmitter runs 450 watts, has self-contained p.s. uses a 4E27A in the final, is VFO tuned, and has full break-in.



WN3QVC, Chris Hopkins has been a novice less than a year. He plans to do some VHF/UHF work when he gets general sometime this spring.



Dan Cerwin new novice needs gear to get on the air. Can anyone help? See SSB ad.



Mike's on-the-air girlfriend, Irene, WA9EPZ, and her "kid sister". Irene says at age 54 she's young yet.

R.A.E. REPEATER COMM. BUSINESS MEETING MINUTES.

January 22, 1972

1st Anniversary of W3ZLO Repeater

Meeting Location: K3WTZ's QTH

Purpose: Discuss repeater committee business.

Time: 3:00 PM

Present: K8EUR, W3AQY, WA3GHT, K3ZGG, K3QAY, K3WTZ, W3ZLO, K3QHO, K3NAU, W3NFM, K3ATZ, WA3EAY, W3MED, W3UTZ, W3SN.

K3WTZ described his repeater receiver site and the 450MC links to K8ASR and ZLO transmitter sites.

W3ZLO described the equipment used for transmission at his QTH.

A K.W. input is expected at new Turnbull Elevator site when those plans are carried through. (Auto-Patch telephone call are in plans)

K3NAU described the tower and shed to be erected at "Bliley Electric Company", for new receiver site. A 60 ft solid steel Rohn tower designed for 86 MPH winds will be mounted in concrete. An 8 ft square shed completely enclosed - no windows - will house RX equipment. There will be vents, access doors and insulation in roof (to reduce heat from sun). Equipment will be powered with power from Bliley's lines for which repeater group will pay but otherwise a nominally free lease. Bliley Board of Directors has approved.

K3QAY presented R.A.E. directors with letter putting forth need for a lease arrangement for Turnbull site. Lease to contain a "Hold Harmless" clause and Liability Insurance was also mentioned for consideration.

WTZ and ZLO equipment are to be leased

to club. But repeater committee to pay up keep and electric cost.

Repeater group owed:

\$ 32.90	to W3ZLO
72.21	to K3WTZ
105.11	Total

Brownie moved that we pay these bills. After discussion of committee financial status this carried.

44.18	cash in K3ATZ possession
40.20	in R.A.E. treasury
25.00	authorized by R.A.E.
109.38	Total available

W3AQY, K3ZGG, WA3GHT, and W3PJD donated \$50.00 each (\$200 total) to repeater fund (which as part of R.A.E. is deductible since R.A.E. is approved by I.R.S. as educational group)

\$204.27 left after paying above.

Dues and classes of members discussed. Dues of \$2.00/month and one membership class, with no initiation fees, was agreed upon. Vote on dues was unanimous (SN moved and QHT second)

After lengthy discussion it was voted that repeater output be moved from 94 to .76 as soon as practical. Move to .76 transmit will do first. (.94 to be left open for simplex) Receiver inputs will be .19 and .34.

Since .34 receive will be maintained, new .19 equipment is needed for receiver site. \$65.00 was voted for procurement of all but XTAL for 19 which will be bought later. (WTZ moved, NAU second) (Planned Auto Patch to be funded separately) K3QHO moved to adjourn.

P.S. During meeting much of interest but most of direct business came out. For instance it is desirable that repeaters transmit farther than it receive so that mobiles can be told they have lost contact with repeater's receiver.

Cleveland repeater has 75 users.

One stream of National level thinking is to set FM up as follows:

(continued on page 8)

Repeater Committee Minutes (continued)

- 146.01)
to) Repeater inputs
- 146.37)
- 146.52 Simplex frequencies
- 146.61)
to) Repeater outputs
- 146.97)

Ashtabula repeater dues are \$5.00/month until membership becomes sufficient to carry costs with lower rates.

A 15 millisecond Burst @ 2600 cycles/rec dumps all long distance fare lines. This offers technique to prevent long distance Auto-Patches.

PREZ SEZ

You missed a very interesting QSO if you were not listening to the Metropolitan VHF, Tri-State Net on 50.52 MHz at 2100 local time on February 6th. Any TV or other story producer would have been able to use the material and title it "The Death of a Net." Why do we Hams treat one of our assigned Bands with such apathy? The net chairman, K3ATZ, had been mentioning the annual meeting for over a month and he had sufficient food and 807's for the dozen or so who usually take interest. Not one person, including myself, bothered to show up. Sure the weather was bad and many other excuses were used. What excuse will we use when we lose this band to commercial or CB interests because of our lack of usage? There is already talk of taking the 220 MHz Band for commercialization so why not 50 MHz also?

K3ATZ did a fine job of holding an On-The-Air election and Doc Baxter, W3YWL, is the new Net Chairman. Joe, WA3MAU, volunteered to continue as Secretary-Treasurer. I think 6M can be more active! I've heard all the bad comments of "I called CQ for an hour and no one answered." The 6M operators may take a tip from the 2M-FM group and put a very simple squelch circuit on their receiv-

ers so they can be left on to monitor the frequency. I have such a circuit if anyone is interested. You have a fair size investment in equipment so why not use it? The 2M Repeater Group may someday be able to add a 6M input and output for cross band usage but this requires the serious support of the Metropolitan VHF Society and not just the few who were on the air on February 14th during the severe snow storm. Let's burn the dust off of those Finals and hear it for 6. Try it. You'll like it!

"Brownie" K3QAY

Northern Chautauqua ARC Annual Ham-of-the-Year Award Banquet will be held on April 1, at the Village Squire, Fredonia.

WHAT KIND ARE YOU?

Are you an active member
The kind that would be missed
Or are you just contented
That Your Name is on the list?

Do you attend the meetings
And mingle with the flock
Or do you stay at home
And criticize and knock?

Do you take an active part
To help the work along
Or are you satisfied to be
the kind that just belongs?

Do you ever voluntarily
Help at the guiding stick,
Or leave the work to just a few
And talk about the clique?

Come out to the meetings often
And help with hand and heart,
Don't be just a member
But take an active part.

Think this over member
You know right from wrong
Are you an active member
Or do you just belong?

-Anonymous

From Air Force MARS bulletin submitted
by Joe, WA3MAU.

LETTERS FROM OUR READERS

Editor: I note "Eli", W8GR, didn't pay my '72 dues so here is my money. "Eli" has a good suggestion -- paying 3 years in advance and knock off 25¢ or 50¢ for doing so. In this way if a guy dies, the club is money ahead!

Always enjoy the QUA-RAE News Bulletin as they are very interesting and educational.

I liked the article, "Assult on a Landmark" by W3ZLO. Brownie, K3QAY, and I are in the same boats. Scared of heights at my age of 66 years. When I was a young ham back in 1919, I thought nothing of climbing up 60 or 75 feet in a tree to hang an antenna but now I start to shake over 30 feet heights.

I spend 4 to 8 hours pounding my side-swiper key on all bands daily. Worked Ken Milks, W3MED Saturday AM. He tells me he works 2 jobs now. Wants to pay taxes and buy a new motorcycle. HI '73.

P.S. Am member ARRL since 1920.

Editor's note: We young fella's not interested in dying yet, Gross. We think along the lines of charging 25¢ or 50¢ more to pay for extra bookkeeping! HI

R.A.E. DIRECTORS NOTEBOOK

Ballots being sent out to amend the By Laws of RAE to become more workable. Be sure to have yours RECEIVED prior to March 1 to be eligible for counting.

Lease agreements for Repeater Committee rental of equipment are being finalized, and our insurance coverage is being extended to cover possible losses that may result at a later date due to being involved in these agreements.

Plans are also starting to show fruition for the Auction April 8th at St. George Auditorium (same place as last year)

-John A. Squire, K3UPC

AFTER THE BUSINESS MEET.

Tech-Talk and Film on April 6th

Lynn Jeters (W3HTD) suggested that the RAE should have a program on the design and manufacturing of Printed Circuit Boards. This would enable area Hams to become more familiar with the process and use it for their own projects. Bob (K3WTZ) and Brownie (K3QAY) have agreed to demonstrate a few of the techniques and make some circuit boards after the next business meeting. Brownie was Product Engineer on PAC (Printed Assembled Circuits) at Erie Tech Products.

Bob is trying to obtain a Film from Tektronix illustrating various techniques and has already prepared a circuit and screen for a circuit to be used in the repeater. It is conceivable that a pre-amp or some other circuit could be developed as a club project and the circuit boards sold to raise money for the club. '73

K3QAY, Brownie

WHERE THE ACTION IS

Activities Chairman Reports

Did you know that on March 5th Amarillo Texas celebrated "Mother-in-Law" day, and in 1930 the planet Pluto was discovered on March 13? Also in March we observe passively the anniversary of the first Radio Broadcast from the floor of the House of the 73rd congress. The first radio Broadcast from a moving train on WABC, the famous Fred Allen, Jack Benny battle on Benny's radio show in 1937, and the little known accomplishment of one Lothrop Washington, Jr. (swallowed a 3 inch goldfish at the Harvard Union in 1939 to win a \$10 bet).

Radio has played an important part in the lives of Americans since it's beginning. On March 4th of 1933, Franklin Roosevelts inaugural speech "The only thing we have to fear, is fear itself", was heard by millions on radio.

(continued on page 10)

March is a most interesting month, it holds the beginning of spring and turns ones thoughts to mobile operation again. Now that the winter doldrums have passed we can all drag out those old FM rigs we were planning to modify and head for the Red Cross basement on March 16th.

At 8:00 we will begin one of Erie's first FM clinics to help one and all who are interested to get on 2 meter FM. Schematics of the popular 41-V and others will be available, along with 12 Volt supplies, modification instructions and some spare parts to get you rolling. Even some free high class measuring equipment and technical advice from experts.

Its all sponsored by the RAE and the Repeater committee and is just one of the many activities that we have planned for the new year. So there you are! Another history making in Radio-- continuing to serve the public with reliability.

Charlie, W3ZLO

AUCTION APRIL 8, 1972

Once again this year the Radio Association of Erie is going to hold their Auction on April 8th 1972 in the St. George Gymnasium - 5145 Peach Street; Erie, PA (Kearsarge).

As was the case last year, a great many individuals and members generously donated equipment to the R.A.E. for this auction, with the proceeds going into the R.A.E. treasury.

If you have anything at all which you would like to donate this year, why not bring it along and come out to the Auction. Your help and co-operation would be appreciated very much.

It is hoped that the Auction this year will be a big success as the one in 1971 for with your help and support the 1972 Auction cannot help but be a success. 73

Chuck Manross, WA3KAI

• SPECIAL SECTION •

ANTENNA PRIMER for YOUNG and OLD

Some Thoughts on Antennas

Awhile back we got involved in a discussion on antennas. It was lengthy round table and we ran the gamut from theory of gain to how best to relieve snow loading to prevent a winter "antenna party." Sometime later the idea struck us that the beginner is often more bewildered about antennas than anything else. With that in mind we put together this antenna primer. We don't represent it as an all-encompassing engineering treatise but present it only as a sketch of what some Erie Amateurs think about their antennas. We contacted some of the more active hams and asked them, "what is your favorite antenna and why?" Here is what they said. If you have additional questions, please call the ham listed in the article. He has used the thing and can best tell you how to duplicate his results.

Second Thoughts on Antennas

It is surprising what can be done with a low power, inexpensive rig and a good, well tuned antenna. If you don't believe this, ask any of the VHF Hams such as K3HFL or K3WTE. They have worked well over 30 miles on 6M with milliwatt rigs. You need not be interested in radio long to discover that Yagi Beams or multi-element antennas are the best investment for directivity and gain. The first antenna I had on 6M was a Mini-Product Coaxial-Vertical cut for this band only. This antenna has a low radiation angle and works well with both vertically and horizontally polarized signals. Basically it has a 3DB gain over a 6M quarter wave whip since the Coaxial-Vertical is a half wave antenna. This has been proven again recently on a 2M-FM mobile set-up when we compared the whip with a coax-vertical.

Another modification or combination of

(continued on page 11)

Antenna thoughts (continued)

both vertical and horizontal antennas which has worked well for me is a squalo with a whip extending above it from the same mounting post. The whip is driven from the squalo terminals with a half wave length of coax as a matching transformer. This antenna really fooled the fellas on the 6M XMTR hunts since the signal was so good both vertically and horizontally. Needless to say, the 3, 4, 5, 6, 8, 10 element beams on the VHF Bands with a rotator are by far the most

(continued on page 13)

CUBICAL QUAD A cheapie - but a goodie

Ever wish you had a beam to work the rare ones on 10, 15 and 20 but do not want to shell out the \$100 or more required for a triband beam? How about building a quad?

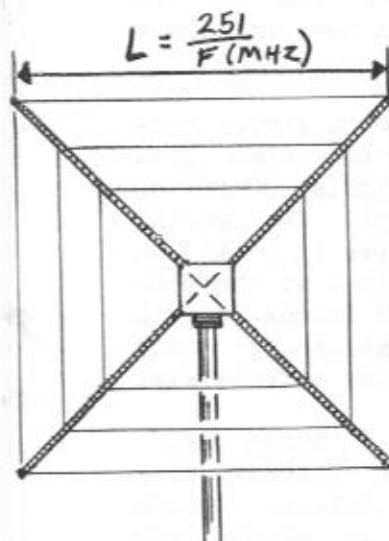
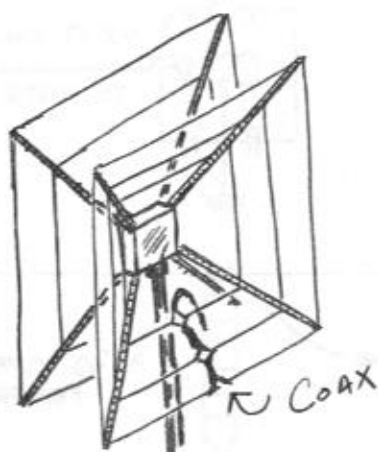
I decided to build a 2 element triband 'Delta' quad found in the September 1961 CQ. This one does not have any boom, and all of the bamboo spreaders are fastened to the center support. This unique construction allows very close to .1 wavelength spacing on all bands so

that it may be fed with a single 50 ohm feedline. The lack of a boom also makes the antenna stronger and easier to construct. The total construction costs were under \$10. The materials necessary to construct this antenna are: wire (enough for 2 wavelengths on each band); plywood for the center support; bamboo, which can be obtained from some furniture stores--usually for free; and some U-clamps to fasten to bamboo to the center.

I would suggest however that much planning be done to make this antenna as mechanically strong as possible because in our Erie weather a poorly constructed antenna will not survive the first windstorm. Feel free to contact me concerning the construction, efficiency and reliability of this antenna. 456-0636

Jim Fitzreiter K3QHO

Editor's note: Front to back ratio excellent (maybe 25 DB) and side rejection is good. Gain could run as high as 20-30 DB. Requires only moderate height--about 30' satisfactory. Small rotor is OK because of low wind resistance. Users say quad can work band about an hour before and after others give up.



G5RV DIPOLE

W3HTD submitted a copy of his favorite antenna, the G5RV Dipole. He got the info from W9WIB who found it in the RSGB Amateur Handbook.

The 102 ft. dipole has been found an excellent compromise suitable for all H.F. Bands and can be fed either of the ways illustrated. In the upper diagram, tuned feeders (300 to 600) OHM are used all the way: in the lower version the high impedance feeder is 34 ft. long and is connected into a 72 OHM twin or coax line. At this junction, the aerial impedance due to standing waves is low on most bands.

The aerial should be supported at the optimum height for the band which is considered most important for DX working. That is, a half or full wavelength above ground. It is perhaps better to arrange this for 14 MC/S at which frequency the aerial is designed to present a fairly close impedance match to 72 OHM coax or twin-lead via the 34 ft. stub which, in this case, acts as a one-to-one impedance transformer.

ON 1.8 MC/S

The two feeder wires at the transmitter end are connected together or the inner & outer of the coax joined and the top plus 'feeder' used as a marconi and a good earth connection.

ON 3.5 MC/S

The electrical center of the aerial commences about 15 ft. down the open line (in other words, the middle 30 ft. of the dipole is folded up). The aerial functions as two half-waves in phase on 7 MC/S with a portion folded at the center. Although the 72 OHM feeder sees a somewhat reactive termination it loads satisfactorily and radiates effectively. AT 14 MC/S

The aerial functions as a three half-wavelength aerial with an effective all-round low-angle polar diagram. Since the impedance at center is about 100 OHMS, a satisfactory match to the 72 OHM feeder is obtained via the 34 ft. of half-wave stub. By making the height a half-wave or a full-wave above ground at

14 MC/S and then raising and lowering the aerial slightly while observing the standing wave ratio on the 72 OHM twin-lead or Coax feeder by means of a S.W.R. Bridge, an excellent impedance match may be obtained on this band.

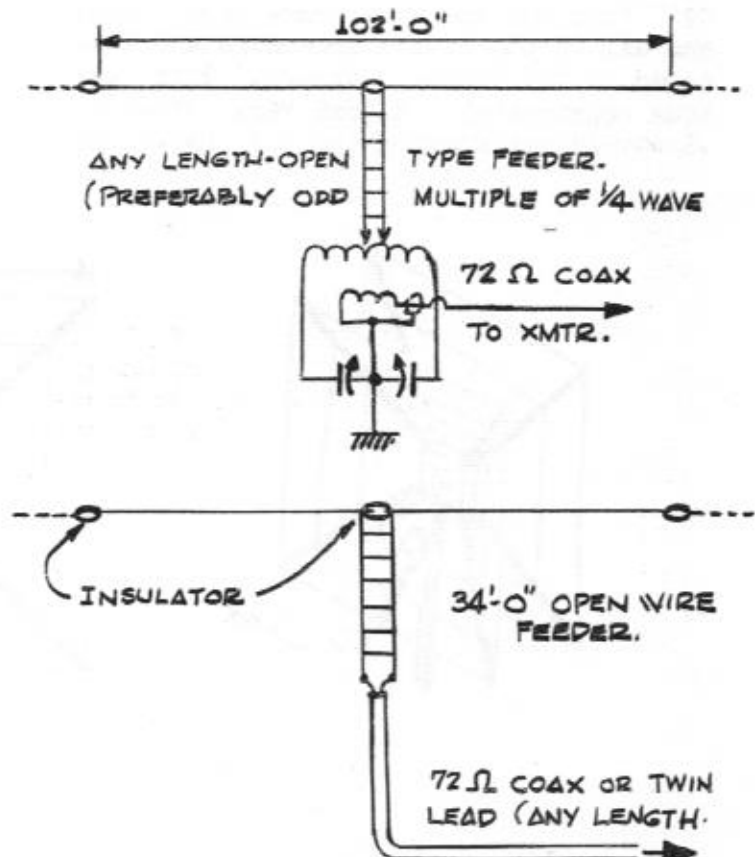
ON 21 MC/S

The aerial works as a slightly extended two-wavelength system or two full waves in phase and is capable of very good results especially if tuned feeders are used to reduce loss.

ON 28 MC/S

It consists of two one-and-a-half wavelength in-line aerials fed in phase. Here again, results are better with a tuned feeder to minimize losses although it works satisfactorily with the 34 ft. stub and 72 OHM feeder.

When using tuned feeders, it is recommended that the feeder taps should be adjusted experimentally to obtain optimum loading on each band using separate plug-in or switched coils. Connection from the antenna T U, to the transmitter should be made with 72 OHM coaxial cable in which a suitable TVI suppression (low pass) filter may be inserted.



Second Thoughts (continued from page 10)

satisfactory antennas available. It has been found that each element added over a 5 element design adds about 1DB of gain. This gives a choice of stacking two 5 element beams or using one 8 element monster to double radiated power. My choice is stacked beams.

Regardless what your preference in antennas happens to be, the performance will only be as good as the tuning of the antenna and matching to the XMTR will allow. The most foolproof and fastest way to accomplish optimum results is with a VSWR Bridge at the antenna during tuning and then placing the Bridge at the XMTR terminals and trimming the transmission line length for minimum VSWR. There is little excuse for using an antenna with over 2:1 VSWR when the efficiency of your station depends so much on getting the signal into the air. A good investment for any Ham is the ARRL Antenna Handbook which details many of the items I have just touched on.

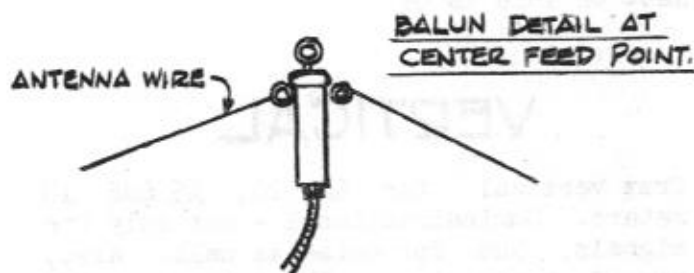
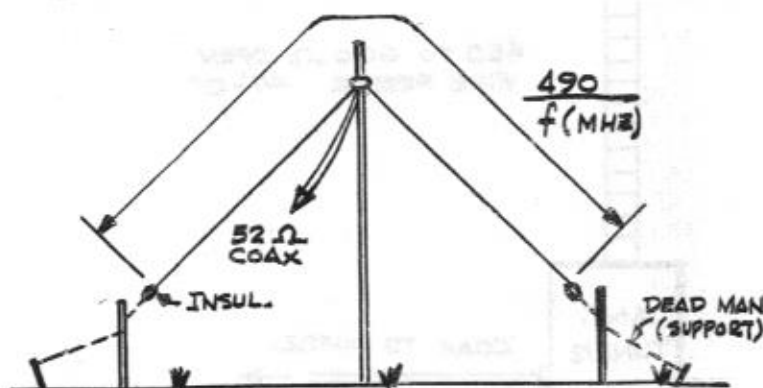
"Brownie" K3QAY

INVERTED "V"

WA3HDK can still remember his first lesson in cross polarization. As a novice, he had fair results with his home brew vertical - working mostly 300-600 miles. But when he applied for membership in MARS he couldn't be heard anywhere in Pennsylvania except occasionally in Wattsburg. 'Whot happen?' Probably Gene, A3NFX, had the answer--go horizontal. A simple dipole up about 10 feet helped. "Better but not good enough yet," came the answer. Raised antenna to about 20-25 feet--pruned to beat the band. Helped some. (up to about 60 ft, height of 75 meter antenna affects impedance - ie. tuning - of the thing so you must adjust length at each height change)

Some of the boys had excellent results with "inverted V," so I looked up info. True inverted V requires about 60 foot

support for 75 meters and the angle at the fed point should be 90° . Dropping the ends of the dipole lowers the impedance from about 70 ohms to near 50 ohms (better match to RG-8). Also electrical length changes. See formula in drawing. Couldn't swing 60 foot tower for the center, so I settled on a 30 foot pole. While I was at it, put the Balun back in the line. The balanced output of the 1:1 Balun matches the balanced antenna and transforms the unbalanced output of the XMTR and co-ax for optimum signal transfer without radiating from the feed-line. Now I can work all over the state in the early afternoon on all but the most severe summer days. My RG 58 feedline is 100' long and input power is about 130 watts pep. Does the antenna work. You bet it does!



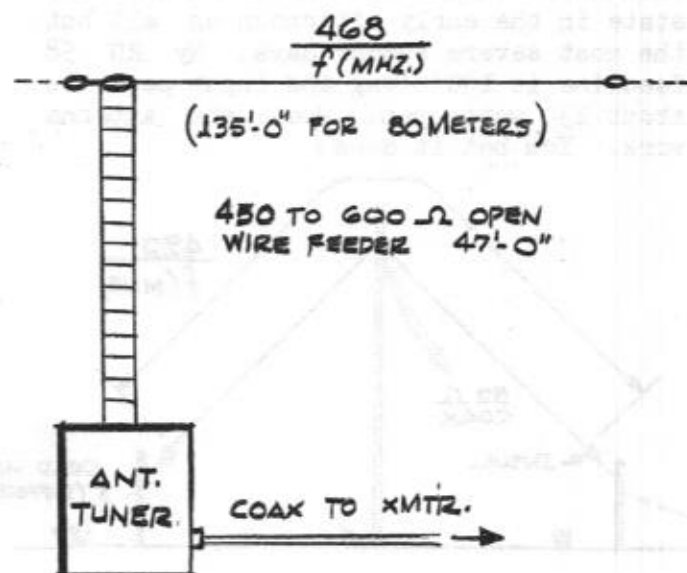
K3PLV - Craig is now 40m mobile and into ECARS regularly.

K3VXE/7 - Ron was back in Erie in February, sporting a nice tan and bragging about Arizona weather.

K3NAU - Not only having trouble with his mobile rig. . . car fouling up. too.

ZEPP

W3LOS said his favorite antenna is the Zepp. The Zepp is an end fed long wire. It is a half wave, end-fed long wire. Its high impedance will not match your transmitter without a tuner. Leo didn't furnish details on his tuner but we will try to weasle it out of him for a future article. By the way he says with the antenna up about 30 feet, he is able to tune all bands. (also see Leo's comment about verticals)



Checked again with Leo - Found out that he only uses the ZEPP on 80 meters. Rest of info is OK.

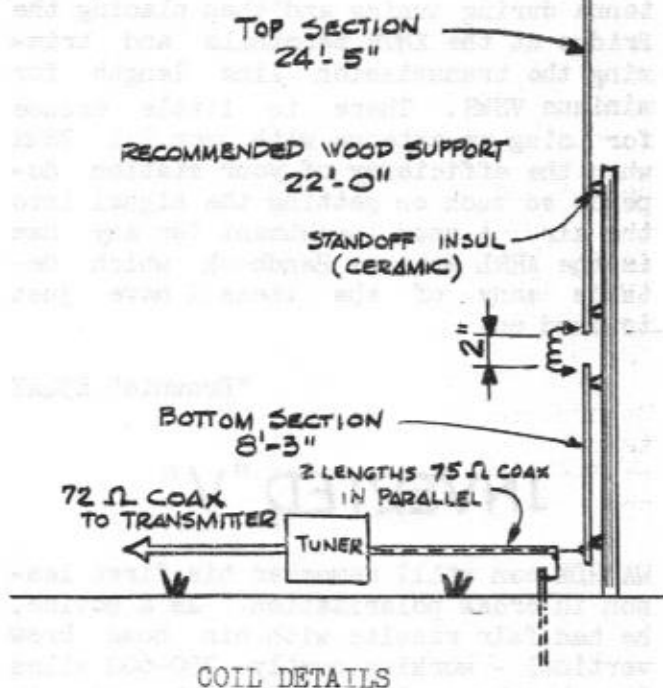
VERTICAL

Trap vertical for 40, 20, 15 and 10 meters. Omnidirectional - not only for signals, but for noise as well. Also, top of vertical is 55 feet up. The highest point in the neighborhood. During an electrical storm there is a continuous barrage of discharges across the spark gap. Man, what a racket that makes!!! Recommend beam antenna over vertical, even though it is only a 2-element job. A Quad would also do a better job than a vertical.

Leo, W3LOS

G3RFG ALL-BAND VERTICAL

A novel vertical antenna caught our eye recently, so I thought we might pass it on. Details are pretty much self-explanatory if you read the accompanying text and look at the Diagram. Just remember to use a good ground for this or any other vertical and try to keep it out in the open away from other objects which may absorb RF. (This text was taken directly from a British ham magazine so please bear with the odd wordage and spelling.



It is recommended that anyone who constructs this aerial should use a g.d.o. to find the exact taps on their coils for resonance on the various bands, but the following coil construction details are supplied as a basis. A ribbed ceramic former of 2" diameter is wound with 55 turns of 20 s.w.g. tinned copper wire. The first 40 turns are spaced 1/10" apart, and the bottom 15 turns are close wound and enamel covered. Fly-leads are connected to the top, 22 turns down (for three-quarter wave on 20 metres), 29 turns down for 80 metres, and at the bottom for top band.

(continued on page 15)

		S.W.R.
Link out, Coil out	1/4 on 10 mx*	1:6
Link in	1/4 on 40 mx	1:1
Link in	3/4 on 15 mx	1:4
Coil in, A to B	3/4 on 20 mx	1:2
Coil in, A to C	1/4 on 80 mx	1:4
Coil in, A to D	1/4 on 160 mx	1:4

* On 10 metres the aerial can be used in two other ways.

- Disconnect the base feeder and use a 75 ohm feeder connected to the junction. This is now a vertical full-wave dipole. S.w.r. is 1:6.
- Earth the lower section and connect a 50 ohm feeder to the junction to make an elevated feed three-quarter wave vertical. The s.w.r. is 1:4.

DOUBLE BALUN

W3NEX has had phenomenal success with his Double Balun (Bazooka) antenna made out of RG8 Co-axial cable. His is up about 60 feet which may account for its DX capabilities, but the really nice feature is that he can QSY to any portion of 80. Additional info came from 73 magazine, May '63 and Popular Electronics April '70.

- Calculate the over all length of the antenna using the standard formula found in the amateur handbook.
- Calculate the length of the coax section using the velocity factor of the type coax being used. RG-8U has a velocity factor of .66 and assuming an antenna length of 120 feet this would make the coax length 80 feet.

(continued on page 16)

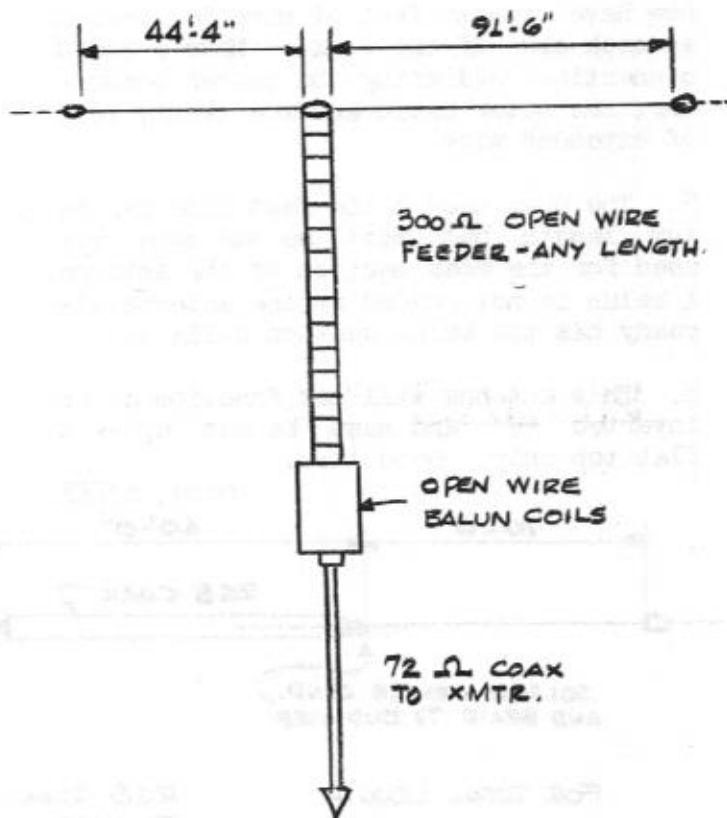
WINDOM

W3PIX has seven antennas on his lot. He says probably his most favorite antenna is his TA33. Since that is a commercial bean, we won't try to cover it here; but Dick does recommend highly the windom (with the Zepp running close behind). Both antennas seem to work well on all bands. W3LOS has told us about his Zepp so here's the scoop on Dick's windom. It is cut for 80 meters and works best there. He says all other bands seem to work pretty well including 6 meters. Impedance is high so Dick feeds it with open coil balun.

Besides the antennas just mentioned, Dick also uses a 40 meter dipole, vertical on 80-15 meters, and a vertical dipole on 2 meters. He'll be glad to furnish more info if you call him. Two antennas that he wants to try are the Rombic and the Curtain antennas. Anybody using them like to write a summary of their experience with either?

--WA3HDK

Code to some Hams is a pain in the neck. Majority have a much lower opinion.



DOUBLE BALUN (continued from page 15)

3. Separate the outside braid of the coax at the center of the length. Do not open the insulation covering the center conductor.

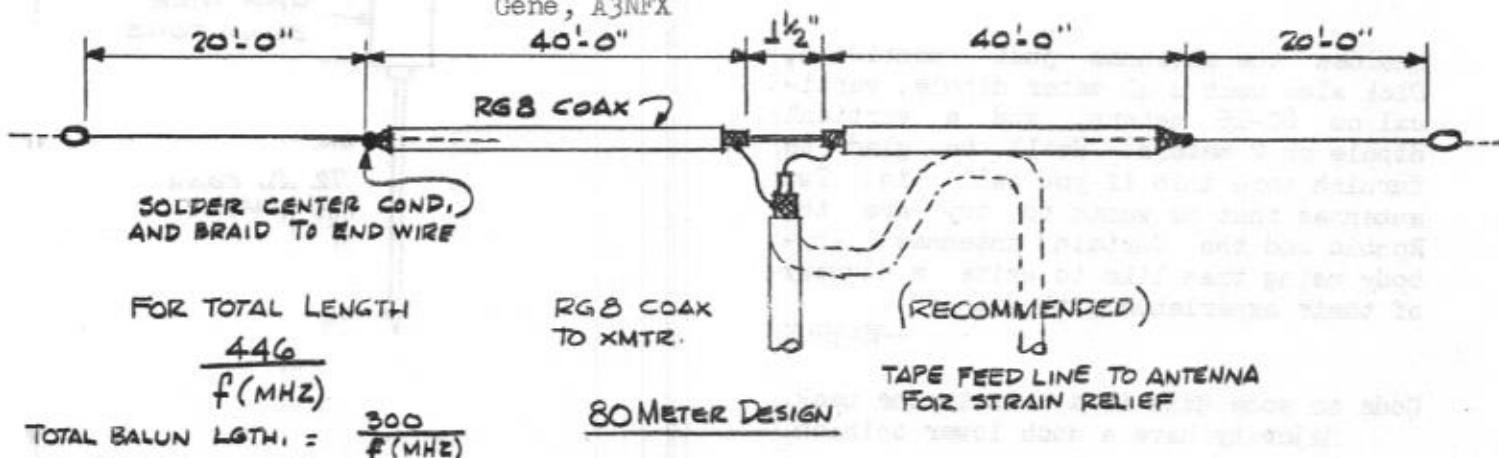
The feed line will connect to the two points where the braid has been separated. This connection should be water-proofed. Also the lead-in should be brought back along the one side for about five feet and taped to the antenna portion to relieve some of the weight that would be on the feed line connections.

4. Each end of the coax should be stripped back for about three inches and the outside braid soldered solid to the center conductor. At this point you will connect solid wire to complete the length calculated for the over-all size of the antenna. Again using 120 feet for the example we find we need 40 feet to attain this length. This is done by dividing the 40 feet into two parts. We now have twenty feet of wire to connect at each end of the coax. Make a solid connection soldering the center conductor, the outer braid and the twenty feet of extended wire.

5. The coax used in the feed line can be any length but must be the same type used for the coax section of the antenna. A balun is not needed as the antenna already has the balun section built in.

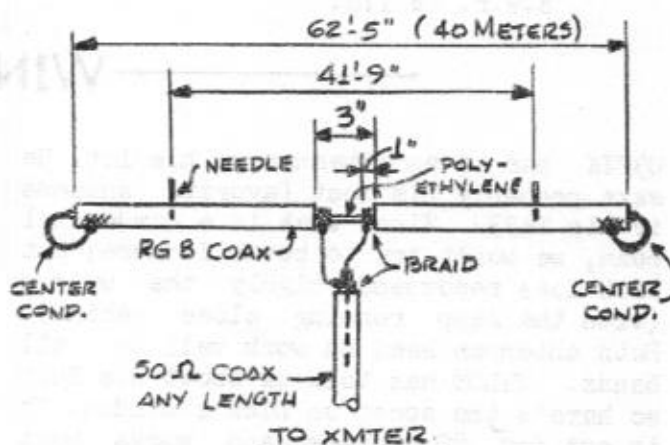
6. This antenna will not function as an inverted "V" and must be put up as a flat top only. Good luck.

Gene, A3NFX



1972
AUCTION
sponsored by
The RADIO ASSOC. of ERIE

• **APRIL 8, 1972** •
in the
St. George Gymnasium
5145 Peach Street
from 2⁰⁰ PM to 4⁰⁰ PM.



MODIFICATION OF A3NFX'S DESIGN.
SEE APRIL 1970 "POPULAR ELECTRONICS"
MAGAZINE - PAGE 96.